



2019

Annual Sustainability and Resiliency Report



# sustainable

## This Sustainability and Resiliency Report

outlines the Massachusetts Port Authority's (Massport) ongoing progress toward meeting our sustainability goals. Massport has focused this year's report on telling the story of sustainability by highlighting a few important projects across our facilities.

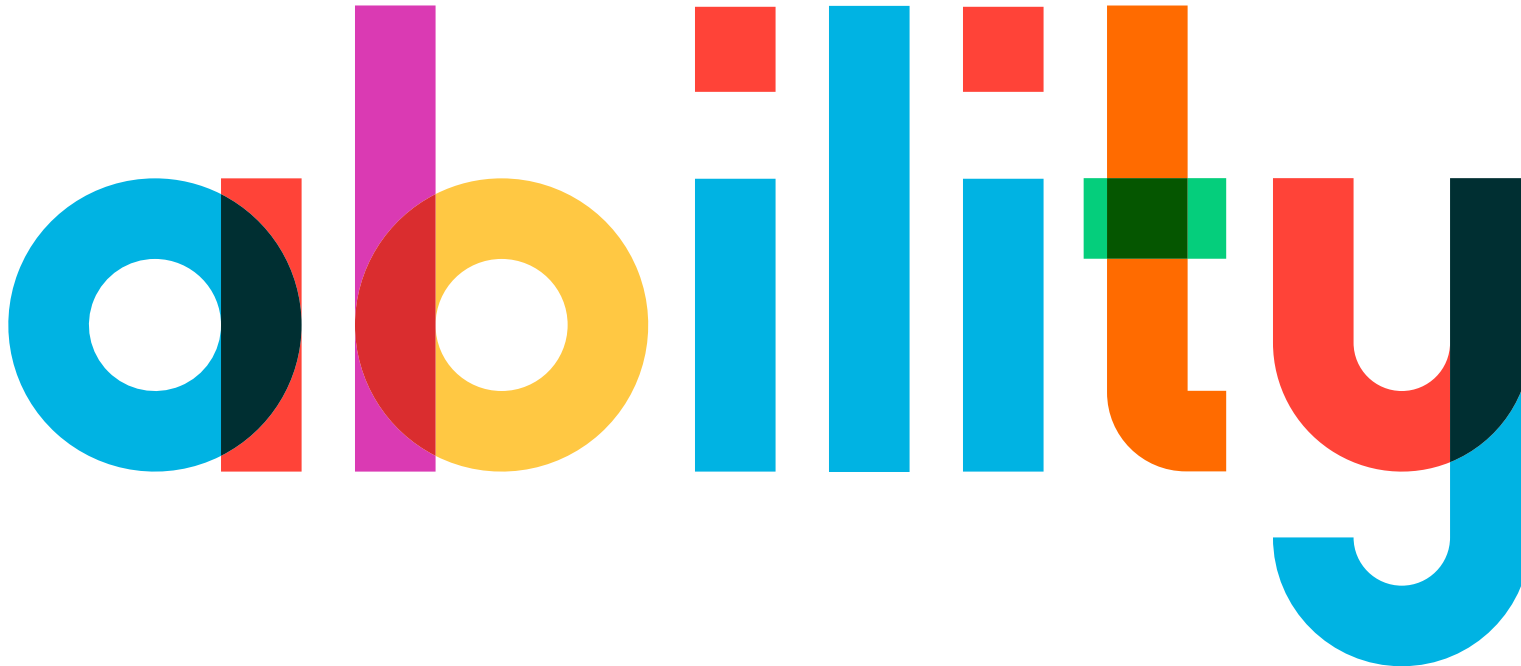
Massport's efforts are achieving measurable results and creating meaningful, positive impacts. Since Massport first initiated these programs, much has changed in local, regional, and global contexts.

This year, Massport has embarked on a new initiative to update our sustainability goals, advance and deepen our commitment to protecting the environment, and continue leading the nation in our resiliency efforts.

Dubbed **Sustainable Massport 2.0**, this effort was launched in February. The update comes as many of the goals and key performance indicators referenced in this report have been met. Our collective work has paid off, but there is much more Massport can accomplish.

More than 150 employees and representative stakeholders from 70 separate entities have worked together across departments and disciplines to discuss Massport's sustainability progress and the opportunities that lie ahead. Using the feedback received, a detailed set of recommendations is being developed and circulated across Massport. Sustainable Massport 2.0 will continue to push the Authority, our employees, and customers to further reduce our impact on the environment.

Embracing our important role as environmental steward, Massport recognizes there are always opportunities for improvement. As Massport continues to grow, it recognizes its responsibility to proactively reevaluate the best approaches for mitigating impacts to the community and the environment.



### Massport Sustainability Vision:

*Massport will maintain its role as an innovative industry leader through continuous improvement in operational efficiency, facility design and construction, and environmental stewardship while engaging passengers, employees, and the community in a sustainable manner.*



**Hello!** It is my privilege to serve as the new CEO and Executive Director of Massport, a dynamic port authority whose best days are ahead. I am particularly proud of Massport’s sustainability and resiliency efforts that continue to serve as a model to other port authorities across the nation.

We are connected to our environment. Surrounded by water and clear New England skies, Massport takes our responsibility to and our impact on our natural world seriously. To that end, we have made huge strides and continue to innovate daily to improve our efforts and limit our impact.

What we have learned from our work is that investments in environmentally-friendly programs, facilities, projects, and equipment provide benefits beyond sustainability. Through these efforts, we have been able to reduce our carbon footprint while increasing the comfort and convenience of our customers.

Keeping Massport successful in this endeavor, however, doesn’t mean maintaining the status quo. Through efforts like Sustainable Massport 2.0, we will continue to advance our best practices while embracing innovation and new ideas. It is time to move the bar higher so we can achieve more.

Our commitment to the environment can be seen as we seek our sixth LEED-certified facility, in the brilliant dynamic tinting of the glass in Terminal B’s Great Hall, investments at Conley terminal, and in our embrace of technology to navigate storm-related emergencies in safe and efficient ways.

This report highlights just some of the stories that make up our sustainability and resiliency efforts at Massport. Each of them has been driven by the relentless commitment of our employees to be better stewards of our natural environment. I am proud of the work we have done and am confident we will continue to successfully meet our goals in the future.

**Lisa S. Wieland**

CEO and Executive Director,  
Massachusetts Port Authority

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More information on Massport’s environmental initiatives can be found at:  
<http://www.massport.com/sustainability/>

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**Massport Sustainability Goals**

**ENERGY AND GREENHOUSE GAS (GHG)  
EMISSIONS**

Reduce energy intensity and GHG emissions while increasing the portion of Massport’s energy generated from renewable sources.

**WATER CONSERVATION**

Conserve regional water resources through reduced potable water consumption.

**COMMUNITY, EMPLOYEE, AND  
PASSENGER WELL-BEING**

Promote economically prosperous, equitable, and healthy communities and passenger and employee well-being.

**MATERIALS, WASTE MANAGEMENT,  
AND RECYCLING**

Reduce waste generation, increase the recycling rate, and utilize environmentally sound materials.

**NOISE ABATEMENT**

Minimize noise impacts from Boston Logan International Airport operations.

**AIR QUALITY**

Decrease emissions of air quality criteria pollutants from Massport sources.

**GROUND ACCESS AND CONNECTIVITY**

Provide superior ground access to Boston Logan International Airport through alternative and high-occupancy vehicle (HOV) travel modes.

**WATER QUALITY/STORMWATER**

Protect water quality and minimize pollutant discharges.

**NATURAL RESOURCES**

Protect and restore natural resources near Massport facilities.

**RESILIENCY**

- Improve resiliency for overall infrastructure and operations.
- Restore operations during and after disruptive events in a safe and economically viable time frame.
- Create robust feedback loops that allow new solutions as conditions change.
- Inform operations and policy, and implement design/build decisions, through the application of sound scientific research principles that consider threats, vulnerabilities, and cost-benefit calculations.
- Become a knowledge-sharing exemplar of a forward-thinking, resilient port authority.
- Work with key influencers and decision makers to strengthen the understanding of the human, national and economic security implications of extreme weather, changing climate, and man-made threats to Massport’s facilities and the region.

**DEFINITIONS:**

**Sustainability:** Consistent with Airports Council International - North America’s definition of sustainability, Massport is focused on a holistic approach to managing Boston Logan International Airport and other Massport facilities to ensure economic viability, operational efficiency, natural resource conservation, and social responsibility (EONS).

**Resiliency:** The ability of a system to prepare for disruptive events, recover within a reasonable timeframe with minimal damage, and sometimes emerge stronger.



Massport's Logan Office Center has micro-wind turbines on the roof to provide sustainable power options for our buildings. The Boston Logan Air Traffic Control Tower can be seen in the background.



### key performance indicators

Each year, Boston Logan tracks and reports its progress towards achieving sustainability and resiliency goals, in the form of KPIs.



**Boston Logan** has one of the highest rates of High-Occupancy Vehicle (HOV) passenger transportation in the nation. However, with a continued increase in passenger traffic, ground transportation to and from Boston Logan remains dynamic and challenging. Massport has expanded the number of service hours at all four suburban locations resulting in a 6.8% increase in ridership.

### Energy and Green House Gas (GHG) Emissions

- Reduce energy consumption
- Increase the portion of Massport's energy generated from renewable sources
- Reduce overall GHG emissions associated with energy consumed in Massport-operated facilities at Boston Logan International Airport
- Reduce GHG emissions from Massport-operated mobile sources

### Key Performance Indicator (KPI)

### Target

### Trend

kTBU per passenger

25% reduction by 2020 (FY2004 baseline)



↓ 26% since FY2004

kTBU per square foot

25% reduction by 2020 (FY2004 baseline)



↓ 25% since FY2004

GHG emissions per passenger

40% reduction by 2020, 80% reduction by 2050 (FY2002 baseline)



↓ 46% since FY2002

Total MMBtu

N/A

Total energy use varies based on the annual number of passengers

kBTU – thousand British Thermal Units    MMBtu – Million British thermal units





**In 2018, Massport** conducted a comprehensive waste assessment of Logan Airport to augment our understanding of the waste streams, identify challenges, and develop recommendations for improving the recycling and waste management program. The waste assessment team conducted 72 total sorts, categorizing more than 5.5 tons of material. Based on audit findings, a robust improvement plan was developed which includes: enhancement of

educational resources and training, continued stakeholder outreach and engagement, simplification of accepted recyclable materials, expansion of the liquid collection program, and dumpster access improvements and modifications.

## Materials, waste management, and recycling

- Reduce the total amount of waste generated at Boston Logan International Airport
- Increase the amount of (non-construction) material recycled
- Continue to have a high amount of construction waste recycled and reused
- Procure local, ecologically friendly, non-toxic products and materials whenever possible
- Encourage tenant composting of organic material and develop capacity for composting or recovering energy from food scraps and other compostable waste

### Key Performance Indicator (KPI)

### Target

### Trend

Diversion rate


Increase recycling rate to **20%** by 2016, **40%** by 2018, and **60%** by 2020

**10.6%\***  
FY2018 diversion rate

Waste diversion rates at Logan Airport significantly decreased from 16.1% (FY17) to approximately 10.6% (FY18). This is due to stringent recycling standards emanating from shifting international policies, which continue to dramatically impact the world-wide recycling industry. Despite these challenges, Massport has been actively developing solutions to reduce contamination, ensure compliance with recycling standards, and increase the amount of materials properly recycled.

Percentage of construction and demolition waste recycled/reused

Maintain percentage of construction and demolition waste diverted close to **100%**

 **TARGET ACHIEVED** Nearly **100%**  
construction and demolition waste recycled/reused

Percentage of waste stream organic material composted

**20%** of organic materials composted by 2016

In 2015, Massport established an organic collection program at two administrative buildings at Logan Airport, and has been actively exploring opportunities to expand the program across the Airport in the future.

\*Diversion rate includes single-stream materials, scrap metal, wooden pallets, and organics



## Community, employee, and passenger well-being

- Continue to support the local and regional economy
- Engage employees and community stakeholders in Boston Logan International Airport sustainability activities
- Continue to support the provision and upkeep of community open space
- Continue to support employee programs that promote health and professional development
- Continue to provide opportunities for passengers to make sustainable transportation choices
- Provide amenities throughout Boston Logan to enhance passenger experience
- Encourage concessionaires to serve healthy, locally grown and/or produced food options.
- Continue to support workforce diversity

### Key Performance Indicator (KPI)

### Target

### Trend

Number of full-time equivalent jobs through design and construction expenditure

Sustain 800 full-time equivalent job opportunities through design and construction expenditure



**3,127**

full time equivalent jobs sustained in FY 2018

Amount of economic impact to the community

Continue to contribute to the regional economy each year



**\$16 billion**

contributed to the regional economy

Percentage of hires in each of the categories outlined by the diversity and inclusion/compliance department

Continue to recruit and retain a diverse group of employees

As of 2018, the Massport workforce consists of **31%** female and **23%** minority employees

## Water Conservation

- Encourage efficient water use and reduce water waste
- Reduce potable water used for landscaping
- Increase water reclamation and reuse activities
- Track and monitor water usage

### Key Performance Indicator (KPI)

Annual Gallons of water per passenger

### Target

**10%** reduction by FY2022  
(FY2012 baseline)

**↓37%**  
since FY2017

### Trend

Although FY2017 had the highest water use per passenger since FY2012, water use per passenger decreased from **11.2** gallons per passenger in FY2017 to **7.01** gallons per passenger in FY2018, a **37.4%** reduction.

## Resiliency

- Incorporate a significantly sound understanding of climate change impacts and vulnerabilities into the management of Massport's assets and operations
- Enhance the resiliency of Massport's critical assets and operations at Boston Logan International Airport to withstand the potential effects of climate change
- Educate staff at Boston Logan International Airport on the potential efforts to improve organizational and operational resiliency
- Collaborate with Massport's internal and external partners to prepare for the potential effects of climate change

### Key Performance Indicator (KPI)

Percentage of capital projects that address resiliency of Massport facilities at Boston Logan International Airport

### Target

**25%** of critical assets and/or key resources enhanced by 2020. **100%** of critical assets and key resources enhanced with resiliency measures by 2025



**100%**

of critical assets enhanced with resiliency measures





## 2019

- ✓ Conducted series of Sustainable Massport 2.0 charrettes
- ✓ Achieved LEED Gold certification (Commercial Interiors) for Logan Airport Terminal B Gates 37-38 Connector Project
- ✓ Elimination of plastic water bottles from all Massport administrative offices and events
- ✓ Conducted Maritime Emissions Profile Study
- Began development of Maritime Sustainability Plan
- Updated Massport's Sustainability & Resiliency Design Guidelines for Capital Projects
- ✓ Updated Boston Logan Flood Operations Plan and Heavy Weather and Flood Operations Plan for Massport's Maritime Facilities
- ✓ Relocation of Ride App pick up and drop off locations to central garage to help reduce traffic congestion
- ✓ Ongoing implementation of Conley Terminal Expansion materials and soil reuse management plan
- Continued expansion of EV and eGSE charging infrastructure across Boston Logan and other Massport facilities
- Expansion of Massport fleet vehicles to hybrid or full electric alternatives
- ✓ Introduction of updated Massport Sustainable Meeting Guidelines
- ✓ Procured two new energy-efficient rubber tired gantry cranes for Conley Terminal
- ✓ Installation of bioswales at Logan Express Peabody
- ✓ Conducted a test deployment of flood barriers at Conley Terminal

- ✓ Floodproofing resiliency improvements at L.G. Hanscom Field
- ✓ Launched Logan Forward
- ✓ Installation of pre-conditioned air units at Worcester Airport
- ✓ Completion of program definition study and report to evaluate more permanent resiliency improvements to Fish Pier and evaluation of Logan Office Center resiliency requirements
- ✓ Opening of new Hanscom Airfield Rescue and Fire Fighting building
- ✓ Relocated Boston Logan flood barrier crates from storage in South Boston to Logan Airport
- ✓ Successful completion of EMS ISO 14001 audit cycle for Hanscom Field, Boston Logan, and Marine Operations (Conley Terminal, Flynn Cruiseport and Fish Pier)
- ✓ Skippy Miller Park dedication

## 2018 (completed)

- ✓ Completed the Boston Logan Waste Assessment Study
- ✓ First real deployment of flood barriers at Massport Maritime
- ✓ Developed Massport Resiliency Web Tool in response to record-setting winter Nor'easters to facilitate management oversight and response to coastal flooding or heavy precipitation events impacting Massport infrastructure
- ✓ Massport received CMAA Leader in Sustainability Award for development of Massport Resiliency Web Tool
- ✓ Electric vehicle fast charging stations installed at Taxi and TNC pool lots

## 2017 (completed)

- ✓ Opening of Logan Airport Terminal B Optimization Project, which incorporates sustainability with efficient dynamic view glass and more
- ✓ Floodproofing resiliency improvements at L.G. Hanscom Field
- ✓ Completed the Logan Airport Stormwater and Flood Risk Modeling Study
- ✓ Massport recognized with the Women's Transportation Seminar – Boston Chapter (WTS-Boston) Employer of the Year Award for supporting the advancement of professional women in the transportation industry
- ✓ Highly efficient chillers installed at Logan Airport Central Heating Plant
- ✓ Expanded the Stormwater Pollution & Prevention Program (SWPPP) to incorporate a resiliency best management practice for Boston Logan tenants
- ✓ Three flood barrier test deployments at Boston Logan critical assets
- ✓ Began process of procuring two new efficient rubber tired gantry cranes for Conley Terminal
- ✓ Completion of program definition study and report to evaluate more permanent resiliency improvements to Fish Pier and evaluation of Logan Office Center resiliency requirements
- ✓ Implemented Omni first of its kind diversity criteria
- ✓ Opening of South Boston Waterfront Transportation Center, which provides electric vehicle charging stations
- ✓ Opening of ICA watershed

- ✓ LEED Gold certified Terminal E New Large Aircraft Wing opened at Boston Logan
- ✓ Massport wins American Council of Engineering Companies (ACEC) Gold Award for the Coastal Flooding Resiliency Plan
- ✓ Massport received a Project Achievement Award from Construction Management Association of America (CMAA) for its Coastal Flooding Resiliency Project
- ✓ The LEED-certifiable Jet Aviation hangar and fixed-base operator (FBO) facility was constructed at L.G. Hanscom Field
- ✓ Boston Fish Pier and Flynn Cruiseport Boston adopted an environmental management system and achieved International Organization for Standardization (ISO) 14001 certification, joining the Paul W. Conley Container Terminal
- ✓ Thomas J. Butler Freight Corridor and Memorial Park opened in South Boston which installed a sound insulation barrier and redirects truck traffic away from residential streets. The 4.5-acre park includes paths, green space, and a dog park
- ✓ First Massport electric vehicle Ride and Drive event was held

## Key

- ✓ = Completed
- = In Progress



# a clear view of the future

**At Massport,** our focus on reducing our environmental impact is not just the right thing to do – it also improves the experience of those we serve. There is no clearer example of this commitment than the installation of a wall of glass in the newly opened Great Hall at Logan International Airport’s Terminal B.

The project more than doubled the space available to the six million American Airlines’ passengers who fly from Logan each year. The Great Hall is now an open and airy space highlighted by floor-to-ceiling windows that overlook the airfield.

This beautiful, sheer expanse of glass allows passengers to enjoy the outdoors while waiting for their flight. While the design makes for a more pleasant passenger experience, it posed a serious challenge for the airport’s sustainability efforts. The massive 12,600 square-foot wall of glass could have substantially increased the amount of energy required to heat and cool the Great Hall.

To solve this issue, Massport enlisted View, a company that specializes in producing a unique dynamic glass solution. The View glass intelligently transitions through four tint states to control the sun’s rays. The technology helps keep the space’s temperature comfortable and reduces the need for passengers to move to avoid the sun’s glare.

**The result:** Increased passenger comfort, reduced glare on digital devices, and reduced surface temperatures on chairs and tables throughout the terminal of 10-15 degrees.

The dynamic glass reduces Logan’s energy consumption, decreasing the new terminal’s carbon footprint. Beyond its impact on sustainability, the project offers passengers more convenience, increased efficiency, and an overall better customer experience.





The new energy-efficient glass wall provides light to and clear views from the 145,000 square foot Great Hall. As a testament to Massport's sustainability effort and in no small part due to the installation of dynamic glass, the massive project is pursuing green building initiatives and LEED certification.





Brian Hennessey, Peter DeBruin and Lauren Laskey  
Climate Mitigation & Resiliency team at Massachusetts Port Authority

**Logan International Airport** was the first airport in the country to receive LEED certification for a terminal. Since then, more than 60% of the buildings and facilities at Boston Logan have been constructed, renovated, or retrofitted for energy conservation.

Five buildings at Boston Logan have achieved LEED certifications, and in the spring of 2019, Hanscom Field's new 11,000-square-foot Airport Rescue and Firefighting Facility (ARFF) and U.S. Customs and Border Protection (CBP) facility is pursuing LEED gold certification.

**LEED matters.** Developed by the U.S. Green Building Council, LEED is an internationally recognized green building certification system, providing independent third-party verification that a building was designed and built using strategies aimed at improving performance in energy savings, water efficiency, carbon dioxide emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

On average, Massport's LEED-certified buildings are 28% more energy-efficient than conventional buildings of the same type and perform 9% better than designed.

Across Massport, as much as 7% of electricity consumed at LEED-certified buildings is generated by on-site solar.

LEED-certified buildings at Boston Logan Airport include:

- **Boston Logan Terminal A Redevelopment**
- **Boston Logan Green Bus Depot**
- **Boston Logan Rental Car Center**
- **Boston Logan John A. Volpe Terminal E NLA Wing**
- **Terminal B Gates 37-38 Connector**

Massport is currently pursuing LEED certifications for several capital projects:

- **Hanscom Field ARFF/CBP Facility**
- **Boston Logan Terminal B Optimization**
- **Boston Logan Terminal E Modernization**
- **Boston Logan Terminal C to E Connector**

“



“Along with new air handling units and more than 90% of the Great Halls’ lights being LED, the dynamic tinting of the window wall allowed for more natural light to enter the space, decreasing the overall energy consumption for the terminal by nearly 15%.

Both investments decrease Logan’s impact on the environment while also increasing passenger comfort—truly a win-win.”

”

**Sam Sleiman**

Director of Capital Programs and Environmental Affairs







# race for gold

## With a design inspired

by The Head of the Charles Regatta, Massport created a new connector that allows for continuous, post-security access to Gates 37 and 38 in Boston Logan's Terminal B.

The project area was operational throughout construction to minimize the impact on passengers, airlines, and Massport operations.

The project, which was designed to meet Massport's sustainability objectives, earned LEED Gold Certification for Commercial Interiors.

Among the sustainable achievements, the project reduced lighting power consumption by 52% and water usage by 28%. Additionally, 23% of the materials used in the project contained recycled content.

To provide a unique travel experience, Massport used rowing references in the terrazzo floor which depicts a winding river, the infographic displays along the walls of the connector, and two rowing boats (donated by Elite Rowing Inc. & Filippi Boats and Community Rowing, Inc.) mounted onto the ceiling.





"One of the special things about the Regatta:  
this is the one that includes everybody."

— Matt Fidler, Head Coach of Harvard Men's Rowing Team



**ROWING 101**  
 Rowing is a team sport where you use your arms and legs to propel a boat forward. It's a great way to get a full-body workout and enjoy the outdoors.

**ALSO**  
 \$450.00  
 \$480.00  
 \$510.00  
 \$540.00  
 \$570.00  
 \$600.00

**Head of the Charles Regatta**

**about the course**

The race begins where the Charles River narrows alongside Boston University's DeWolfe Boathouse. The tempo begins for the race required electrically, so the start of the course layout were developed by event management based on race requirements. After bicycling three miles, co-founder Dr. Howard MacMahon found an electrical pole near the pier and established the finish line there. The course ends between Dix Bridge and Northeastern's Henderson Boathouse. Consisting of two long gradual curves and one short sharp one, the head of the Charles is considered to be one of the toughest courses in rowing.

**about the race**

The first Head Of The Charles (1965) came together through the imagination and efforts of Dr. Howard MacMahon, a 32-year-old neurologist and chairman of the Cambridge Boat Club rowing committee, and O'Arcy MacMahon, a 27-year-old executive with the John Hancock company and one-time stroke of the University of Pennsylvania lightweight four. They opted to try a variation of a British "head" race. The idea for the head race (single file sprint the clock) came from Steve Arlett, a son of Hester-Lyon-Thames, England. Arlett spent all of his 52 years in the sport of rowing as an athlete, boatman and coach. Using the odometer on his mother's bicycle, MacMahon laid out a three-mile course that ran upstream from the Boston University boathouse to the Charles River Reservation Park, across from the VFW, by the way: the very course still rowed today. The first Regatta was set for the Saturday of Columbus Day weekend.

Since the beginning, hundreds of thousands of rowers have made their way up the twisting Head Of The Charles course. Racers have included Olympic medallists and world-championship medalists from historic nations like Great Britain, Australia and New Zealand, as well as international novices from such unlikely rowing ports-of-call as Iraq and Mongolia. Race founder MacMahon sees the essence of the Regatta in the crews that don't typically make the headlines.

A full-time staff of five people manages the Regatta year round, but the heart and soul of the Regatta weekend's success is a dedicated corps of more than 1,000 volunteers. Collectively the volunteers contribute more than 40,000 hours of service to the Regatta each year.







# there's an app for that

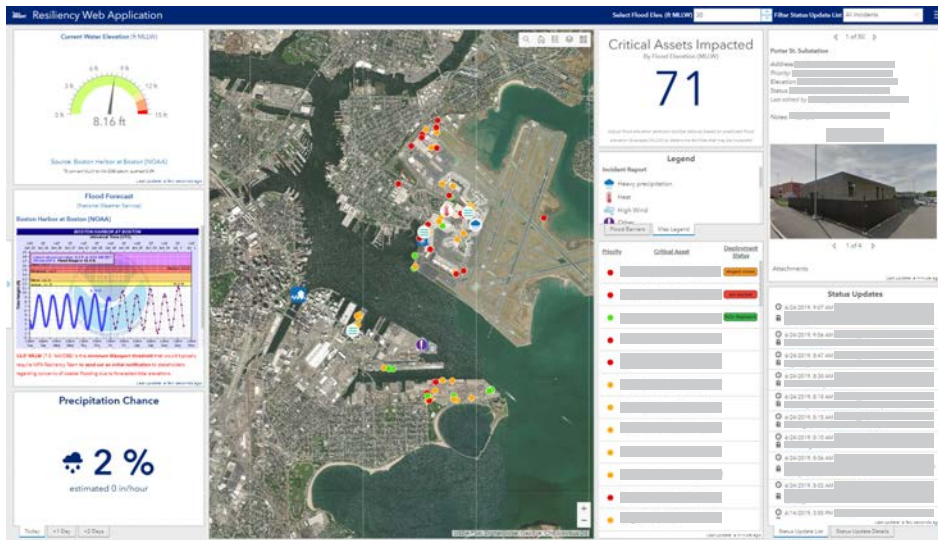
**Writer and humorist,** Mark Twain famously – and correctly – declared, “If you don’t like the weather in New England now, just wait a few minutes.” Bostonians respect the power of weather. We have seen first-hand the ferociousness of serious storms in the last few years. Last winter alone, the Nor’Easters in Boston delivered record-setting tidal surges that exceeded the level for surge from the Blizzard of 1978. For the first time since establishing a resiliency strategy and program in 2013, Massport was faced with a forecasted storm surge that would require the activation of the emergency flood operations plan.

After the storms cleared, Massport underwent an evaluation of what went right and what could be improved. It became clear that the logistics and communications associated with resiliency planning and response were critical to successfully defending against and recovering from severe weather. Massport will continue to learn and adapt its resiliency efforts as climate change continues to increase the intensity of storms.

An idea was born in the aftermath of the severe winter weather of 2018. Massport could use an existing geo-location platform to better prepare and respond to climate change and sea level rise risk. An app was developed to facilitate management oversight of severe weather events impacting Massport and provide decision-makers and first responders with the necessary information available at their fingertips. The app allowed for real-time updates to quickly and easily be made, providing up-to-the-second information on flood waters, barrier deployments, equipment and personnel resources, and site inspections.

The tool provides an intuitive interface for field staff recording information before and during an event, as well as for managers overseeing the status of infrastructure preparation, conditions during an incident, and recovery from any flooding impacts.

**The result:** Not only does the app assist in managing weather events in real-time, the information collected helps improve future response efforts.



**Application features include:**

- Site maps and variable status indicators of all priority infrastructure
- Integration with National Oceanic & Atmospheric Administration tidal flood forecasts
- Real-time notifications based on flood forecast thresholds, which are in turn linked to various response levels from Massport
- Visual representation of potential flooding impacting Massport sites
- Incident reporting allowing staff to provide updates and photos on resources, flood status, and field conditions
- Incident tracking to enable managers to see real-time updates on all sites, or select a site to see location-specific maps and preparation history
- After-incident reporting available across Massport or site-specific with date and time stamps



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“This application is a unique and innovative approach, born from a desire to improve our response to increasingly frequent and destructive storms.

By putting information in one place and available across departments, our people are made safer, and we can better protect our facilities. It’s a smart use of technology that keeps our staff all on the same page during an emergency.”

”

**Luciana Burdi**  
Deputy Director of Capital Programs and Environmental Affairs





# flood fixes

**The Civil Air Terminal** at Hanscom Field has a history of flooding problems. In June of 2017, a heavy precipitation event equivalent to a 100-year storm caused significant damage to the building and major impacts to tenants. Following the event, Massport's Capital Programs and Environmental Affairs Department conducted a thorough evaluation of the causes, and determined that the building and surrounding landscaping would need to be modified to address the challenges of severe weather.

The work included elevating the entrance landscape to the main entrance, adding exterior walls to prevent water from approaching the building, installing floodproof doors at side entrances, and improving the overall site drainage. Today the building stands as another example of Massport's efforts to address resiliency for its infrastructure and operations.





# smarter way to comfort

**Rather than** walking out on the tarmac to board flights, passengers at two gates at Worcester Regional Airport will soon be able to board their plane in the comfort and protection of a jetway. Worcester will add two passenger jet boarding bridges this year that will include ground power and preconditioned air for Gates 3 and 4. The preconditioned air supply at the terminal saves a tremendous amount of jet fuel and increases the airport's overall environmental efficiency.

A single narrow body aircraft running its on-board air conditioning system for one hour every day produces in excess of 100 tons of carbon dioxide a year. The ability to keep plane cabins cool on hot days and warm during cold New England winters without the need to burn jet fuel will significantly reduce emissions at Worcester.

Over the next 20 years, these new preconditioned air units will reduce carbon monoxide emissions by 4.6 tons, emissions that increase the production of dangerous ozone by 3.8 tons, and carbon dioxide by 2,229 tons.

**The result?** Now planes visiting Worcester will have access to preconditioned air, allowing them to shut their engines down while waiting at the gates. The ground-based preconditioned air units run on electricity and are quieter and more efficient than conventional on-board systems. The terminal jet bridge investments at Worcester will keep passengers comfortable and decrease the facilities carbon footprint in an efficient and sustainable way.



# modern bustling port

**Conley Container Terminal** is the heart of Boston's working port, boasting more than 9,000 blue collar jobs and generating \$8.2 billion in economic impact annually. The 101-acre facility is also the only full-service deep-water container terminal in the region, making it a vital transportation and economic resource in New England.

Nearly all the world's top ocean carriers call on Conley Terminal, providing service to three major trade lanes, including Asia, Northern Europe, and the Mediterranean. In 2018, Conley Terminal saw record-breaking growth with a 10% increase in container volume, setting a new record for units shipped through the terminal.

To proactively plan for additional growth, Massport has been working on a modernization program for the Conley Terminal. The program includes ongoing investments in equipment, terminal technology, new berth construction, and a \$350 million investment in harbor dredging that ensures Conley Terminal remains competitive in the future.

The improvements to Conley Terminal involve the addition of two new Rubber Tired Gantry (RTG) cranes, which are used to move the containers within the shipping yard, to its current fleet of cranes. The new energy-efficient and environmentally-friendly RTGs are equipped with several advanced features that significantly increase performance and reliability, while decreasing maintenance costs and environmental impacts. With two more energy-efficient RTGs on the way in the future, Massport plans to operate a fleet of 16 RTGs by 2020.

The new RTGs are the most fuel-efficient available, and the 16-wheel machines can lift 40-ton containers across the port. Improvements in RTG technology, including auto-steering, will reduce emissions and contribute to lowering Conley Terminal's carbon footprint.

**The result:** The new RTGs make the Conley Container Terminal more efficient and less polluting. The new machines reduce air pollution by 290 tons of nitrogen oxides and 29 tons of particulate matter while reducing fuel use by up to 30% over their lifetimes.

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## Other sustainability efforts at the Terminal:

- **Conley Container Terminal recently retrofitted its high mast yard lighting with LEDs, cutting its energy use by half and resulting in over 175,000 kWh of energy savings. The energy efficient lighting with light pollution prevention will conserve energy and mitigate light impacts on community and wildlife.**
- **Through The Conley Terminal Clean Truck Program, Massport leveraged a federal environmental grant to remove over 80 older trucks from service and replaced them with cleaner operating vehicles.**
- **The new Berth 10 project at Conley Terminal restores the former oil terminal to active use by removing old pier structures and cleaning up and reusing oil-impacted soil at the site. Reuse of materials on-site helped to eliminate roughly 8,700 truck trips related to off-site disposal significantly reducing vehicle emissions.**





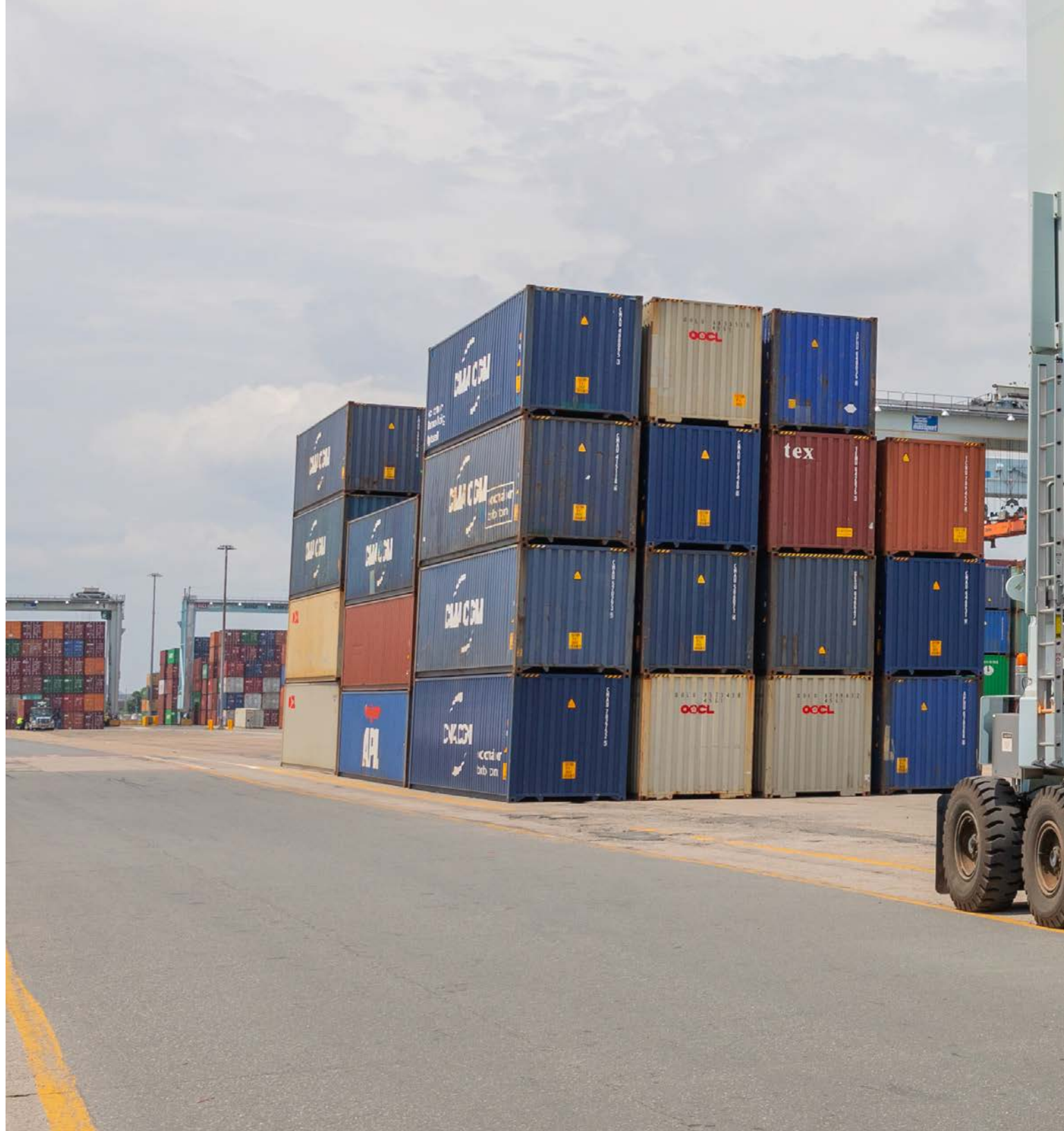
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“RTGs are some of the largest wheeled vehicles in the world and represent a significant amount of the port’s carbon emissions.

As we continue to grow and process more freight, every investment we can make to reduce our carbon footprint is valuable. We can, and will, grow the amount of cargo we move and decrease our environmental impact.”

**Lisa Hanlon**  
Maritime Maintenance  
Manager

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KONECRANES

UASC

CAI

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# landside approach

**Walk through** any of Massport's terminals and you will see a reflection of the digital world all around us. Nearly all who are flying have their phone in hand, checking into their flights, arranging to be picked up, or letting friends and family know they have arrived safely.

The convenience of ride-sharing apps has provided customers with new options to travel to and from the airport, but poses a challenge for sustainability efforts. Uber and Lyft made 12 million trips to and from Logan Airport last year. Nearly 5 million of those trips were "dead head" trips without a passenger on board. All these trips made the airport's landside arrival and departure lanes congested.

Massport has implemented a plan for consolidated drop-off and pick-up which is better for Uber and Lyft customers and drivers, provides new and expanded HOV/Logan Express options, reduces congestion for all passengers, and is better for the environment. The new covered Ride App TNC drop-off and pick-up areas for the terminals will eliminate over 1.5 million car trips through the tunnels at Boston Logan.

The expanded Logan Express options look to double the Logan Express ridership to 4 million, further reducing emissions.

Massport continues to seek ways to understand and take advantage of our shared digital connectivity to provide convenient and thoughtful tools for our customers. We are converting challenges into opportunities for reducing our carbon footprint, becoming better neighbors to the surrounding community, and helping travelers arrive home safely.

Massport is implementing a comprehensive program to promote sustainable transportation and reduce the overall environmental and emissions impacts of travel to and from the Airport. One component of this program involves the expansion of landside EV charging infrastructure across the Authority for Massport fleets, employees, tenants, and the public. To date, Massport has installed nearly 80 EV charging ports at Logan Airport; by early next year, Massport aims to double the number of EV stations at the Airport.

We also continue to expand Massport's electric vehicle fleet, and recently replaced a dozen vehicles with hybrid or all-electric vehicles.

**And on the airside** of the airport, Massport has been installing charging stations and supporting tenants' efforts to convert gasoline and diesel powered ground support equipment (GSE) with all-electric equipment. Logan Airport tenants currently operate more than 115 electric GSEs at the Airport. We are working with airlines and ground-handling companies as they move to electrify their GSE fleets.

Over 1,000 pieces of equipment will be replaced with electrified alternatives, and 50 eGSE-charging stations will be installed for the airlines at each terminal. Conversion to electric equipment will reduce emissions by nearly 178,000 tons of CO<sub>2</sub> over the lifetime of the equipment. This helps to mitigate impacts of climate change, improve air quality, and reduce noise in the community.

Massport continues to explore opportunities and funding to further expand the airside and landside EV charging program.







## environmental management systems

**Massport believes** in a systematic approach to its sustainability and resiliency efforts. It seeks to minimize the impact of operations on the environment through continuous improvement of environmental performance and the implementation of pollution prevention measures.

To hold our efforts accountable, Massport has sought third-party audits of our Environmental Management Systems (EMS) from the International Organization for Standardization (ISO). The certification series is known around the world as ISO 14001.

In 2001, Hanscom Field became the first airport in the country to receive ISO certification through the deployment and implementation of its EMS.

Following ISO 14001 certification at Hanscom, Conley Terminal was certified in 2003; Boston Logan International was certified in 2006; and the Flynn Cruiseport and Fish Pier were certified in 2017. These certifications represent a significant achievement in environmental management and performance.

By embracing and independently certifying our EMS, Massport is made more sustainable, and we reduce the impacts on our neighbors, beaches, marine life, and water.



Massport Pride flag raising ceremony at Piers Park in celebration of Pride Month 2019 in Boston.

### about the font

In 2017, Gilbert Baker, the creator of the iconic Rainbow Flag, sadly passed away. To honor the memory of Mr. Baker, NewFest and NYC Pride partnered with Fontself to create a free font inspired by the iconic Rainbow Flag, the font was named 'Gilbert' after Mr. Baker.

Massachusetts boasts the second-largest LGBT population in the nation. Massport is proud to reflect that diversity and inclusion. At Massport we are

#WickedProud

SUSTAIN

odibility



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